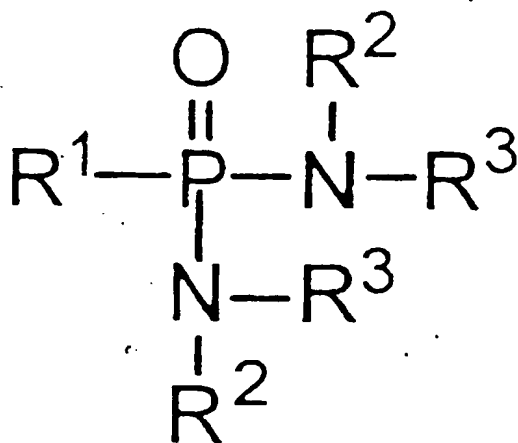


ABSTRACT

The invention provides a process by which rare earth metal ions can be efficiently extracted by easy operation, and effective extracting reagents for the process. Specifically, phosphonamides represented by the general formula [1]; a process for producing the same; reagents for extracting rare earth metal ions, containing the phosphonamides; and a process for extraction of rare earth metal ions with the phosphonamides: [1] wherein R^1 is alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkynyl, aryl, aralkyl, or a heterocyclic group, with the proviso that each group may be substituted; R^2 is hydrogen, alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl, aralkyl, or a heterocyclic group, with the proviso that each group may be substituted; R^3 is hydrogen, alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl, aralkyl, or a heterocyclic group, with the proviso that each group may be substituted, or the two R^3 s may be united to form alkylene, cycloalkylene, or arylene.



[1]